

We Claim:

1. A system for verifying that a particular fluid supply is connected to a flow control device, wherein the flow control device acts on a fluid conduit coupled to the fluid supply to move the fluid from the fluid supply through the conduit, the fluid supply and conduit forming an upstream fluid supply segment, the system comprising:

a pressure sensor assigned to the flow control device and coupled to the fluid conduit at a location between the fluid supply and the flow control device, the pressure sensor sensing pressure of the conduit and providing pressure signals in response to such sensed pressure; and

a processor having a connection verification mode in which the processor is configured to provide a verification indication when the processor receives pressure signals indicative of an expected pressure change in the conduit to thereby verify that the particular fluid supply is connected to the flow control device.

2. The system of claim 1 wherein the processor is further configured to delay the flow control device from moving fluid through the conduit until the processor receives pressure signals indicative of an expected pressure change in the conduit to thereby verify that the particular fluid supply is connected to the flow control device.

3. The system of claim 1 wherein the processor in the connection verification mode is configured to detect that the expected pressure change is at a second flow control device and indicate an identity of the second flow control device.

4. The system of claim 1 wherein the processor in the connection verification mode is further configured to:

prompt an operator to induce a pressure change in the fluid conduit; and
monitor the pressure signals to detect the operator-induced pressure change.

5. The system of claim 4 wherein the processor in the connection verification mode is further configured to delay the flow control device from moving fluid through the conduit until the operator-induced pressure change is detected.

6. The system of claim 4 wherein the processor in the connection verification mode is further configured to:

monitor the pressure signals for a predetermined time period to detect the induced pressure change; and

prompt the operator to confirm that a pressure change has been induced if the induced pressure change is not detected within the predetermined time period.

7. The system of claim 6 wherein the processor in the connection verification mode is further configured to provide an alert indication if the operator confirms that the pressure change has been induced but the processor has not detected a pressure change indicated by the pressure signals within the predetermined time period.

8. The system of claim 4 wherein the processor in the connection verification mode is configured to prompt the operator to squeeze the upstream fluid supply segment to induce the pressure change in the fluid conduit.

9. The system of claim 4 wherein the processor in the connection verification mode is configured to prompt the operator to change the height of the particular fluid supply to induce the pressure change in the fluid conduit.

10. The system of claim 4 wherein the processor in the connection verification mode is configured to prompt the operator to tap the upstream fluid supply segment to induce the pressure change.

11. The system of claim 1 wherein the pressure sensor is mounted to the flow control device and is located adjacent and upstream in relation to the flow control device.

12. The system of claim 1 wherein the pressure sensor is located and configured such that when the fluid conduit is mounted at the flow control device, the fluid conduit also must be mounted in operable communication with the pressure sensor.

13. The system of claim 1 wherein the processor further includes an override mode, the processor being configured such that when in the override mode, the processor does not run the verification mode.

14. The system of claim 13 further comprising a memory connected with the processor, wherein the processor is further configured to store data in the memory indicating that the processor was configured in the override mode.

15. The system of claim 2 wherein the processor further includes an override mode, the processor being configured such that when in the override mode, the processor does not delay the flow control device from moving fluid through the conduit.

16. The system of claim 15 further comprising a memory connected with the processor, wherein the processor is further configured to store data in the memory indicating that the processor was configured in the override mode.

16. The system of claim 13 further including:
a drug library in which is stored a data base of drugs, wherein the drug data base also includes instructions linked to selected drugs to instruct the processor to run the connection verification mode; and
an input device coupled to the processor by which a selection of a drug from the drug data base is made;

wherein the processor receives the drug selection from the input device, accesses the drug library, and is configured in the connection verification mode in the event that such an instruction is linked to the selected drug.

17. A patient care system for infusing multiple medical fluids into a patient, the medical fluids being contained in multiple fluid containers each of which is connected to the patient through a flexible fluid conduit, the patient care system including multiple fluid pump channels each of which operates on a single fluid conduit to move fluid from the respective fluid container through the fluid conduit to the patient, the fluid containers and respective conduits each forming an upstream fluid supply segment, the multiple pump channels being connected with a common processor configured to verify that a particular fluid container is connected to a particular pump channel, the patient care system comprising:

a plurality of pressure sensors, each of which is assigned to a separate pump channel and each of which is coupled to the fluid conduit of the respective pump channel at a location between the respective fluid container and the pump channel, each pressure sensor sensing pressure of the respective conduit and providing pressure signals in response to such sensed pressure;

wherein the common processor has a connection verification mode in which the processor is configured to provide a verification indication when the processor receives pressure signals indicative of an expected pressure change in a particular conduit to thereby verify that the particular fluid container is connected to the particular pump channel through the particular conduit.

19. The patient care system of claim 18 wherein the processor is further configured to delay a flow control device from moving fluid through the respective conduit until the processor receives pressure signals indicative of an expected pressure change in the respective conduit to thereby verify that the particular fluid container is connected to the respective flow control device.

20. The patient care system of claim 18 wherein the processor in the connection verification mode is configured to detect that the expected pressure change is at any of the pump channels with which the processor is connected and indicate an identity to the operator of the pump channel at which the expected pressure change was actually detected.

21. The patient care system of claim 18 wherein the processor in the connection verification mode is further configured to:

prompt an operator to induce a pressure change in a selected fluid conduit;
and

monitor the pressure signals from the respective pressure sensor for the selected conduit to detect the operator-induced pressure change.

22. The patient care system of claim 21 wherein the processor in the connection verification mode is further configured to delay the respective flow control device from moving fluid through the selected conduit until the operator-induced pressure change is detected.

23. The patient care system of claim 21 wherein the processor in the connection verification mode is further configured to:

monitor the pressure signals for a predetermined time period to detect the induced pressure change; and

prompt the operator to confirm that a pressure change has been induced if the induced pressure change is not detected within the predetermined time period.

24. The patient care system of claim 23 wherein the processor in the connection verification mode is further configured to provide an alert indication if the operator

confirms that the pressure change has been induced but the processor has not detected a pressure change indicated by the pressure signals within the predetermined time period.

25. The patient care system of claim 21 wherein the processor in the connection verification mode is configured to prompt the operator to squeeze the upstream fluid supply segment to induce the pressure change in the fluid conduit.

26. The patient care system of claim 21 wherein the processor in the connection verification mode is configured to prompt the operator to change the height of the particular fluid supply to induce the pressure change in the fluid conduit.

27. The patient care system of claim 21 wherein the processor in the connection verification mode is configured to prompt the operator to tap the upstream fluid supply segment to induce the pressure change.

28. The patient care system of claim 18 wherein the pressure sensor is mounted to the flow control device and is located adjacent and upstream in relation to the flow control device.

29. The patient care system of claim 18 wherein the pressure sensor is located and configured such that when the fluid conduit is mounted at the flow control device, the fluid conduit also must be mounted in operable communication with the pressure sensor.

30. The patient care system of claim 18 wherein the processor further includes an override mode, the processor being configured such that when in the override mode, the processor does not run the verification mode.

31. The patient care system of claim 30 further comprising a memory connected with the processor, wherein the processor is further configured to store data in the memory indicating that the processor was configured in the override mode.

32. The patient care system of claim 19 wherein the processor further includes an override mode, the processor being configured such that when in the override mode, the processor does not delay the flow control device from moving fluid through a selected conduit.

33. The patient care system of claim 32 further comprising a memory connected with the processor, wherein the processor is further configured to store data in the memory indicating that the processor was configured in the override mode.

34. The patient care system of claim 31 further including:
a drug library in which is stored a data base of drugs, wherein the drug data base also includes instructions linked to selected drugs to instruct the processor to run the connection verification mode; and

an input device coupled to the processor by which a selection of a drug from the drug data base is made;

wherein the processor receives the drug selection from the input device, accesses the drug library, and is configured in the connection verification mode in the event that such an instruction is linked to the selected drug.

35. A method for verifying that a particular fluid supply is connected to a flow control device, wherein the flow control device acts on a fluid conduit coupled to the fluid supply to move the fluid from the fluid supply through the fluid conduit, the fluid supply and fluid conduit forming an upstream fluid supply segment, the method comprising:

prompting an operator to induce a pressure change in the fluid conduit;

sensing pressure in the fluid conduit upstream from the flow control device and generating pressure signals in response to the pressure sensed;

processing the pressure signals to detect a pressure change in the fluid conduit in response to the step of prompting the operator to induce the pressure change; and

indicating a connection verification that the fluid supply is connected to the flow control device when the induced pressure change is detected from processing the pressure signals.

36. The method of claim 35 further comprising delaying the flow control device from moving fluid through the conduit until the pressure change in the fluid conduit is detected.

37. The method of claim 35 further comprising:
detecting the expected pressure change at a second flow control device; and
indicating an identity of the second flow control device.

38. The method of claim 35 further comprising:
prompting an operator to induce a pressure change in the fluid conduit; and
monitoring the pressure signals to detect the operator-induced pressure change.

39. The method of claim 38 further comprising delaying the flow control device from moving fluid through the conduit until the operator-induced pressure change is detected.

40. The method of claim 38 further comprising:
monitoring the pressure signals for a predetermined time period to detect the induced pressure change; and

prompting the operator to confirm that a pressure change has been induced if the induced pressure change is not detected within the predetermined time period.

41. The method of claim 40 further comprising providing an alert indication if the operator confirms that the pressure change has been induced but the processor has not detected a pressure change indicated by the pressure signals within the predetermined time period.

42. The method of claim 38 further comprising prompting the operator to squeeze the upstream fluid supply segment to induce the pressure change in the fluid conduit.

43. The method of claim 38 further comprising prompting the operator to change the height of the particular fluid supply to induce the pressure change in the fluid conduit.

44. The method of claim 38 further comprising prompting the operator to tap the upstream fluid supply segment to induce the pressure change.

45. The method of claim 35 further comprising selectively overriding the processing and indicating steps.

46. The method of claim 45 further comprising storing an override in a memory for later analysis.

47. The method of claim 36 further comprising selectively overriding the processing, indicating, and delaying steps.

48. The method of claim 47 further comprising storing an override in a memory for later analysis.

49. The method of claim 45 further including:

- storing a drug library comprising a data base of drugs, wherein the drug data base also includes instructions linked to selected drugs to run a connection verification method; and
- selecting a drug from the drug data base;
- accessing the drug library and performing the prompting, sensing, processing, and indicating steps in the event that such an instruction is linked to the selected drug.